

Your ref : PJF02122GB  
Application No: GB0600513.6  
Applicant : Finisar Corporation

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Tel : 01633 814962  
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Latest date for reply: 2 October 2006

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## Patents Act 1977 Examination Report under Section 18(3)

### Basis of the examination

1. I have examined your application in the form that it was printed by WIPO when it was in the international phase.

### Plurality of invention

2. Your claims define a number of separate inventions not forming a single inventive concept. The inventions are:

- i) selectively looping back a signal input to an optical transceiver at an electrical terminal, as claimed in claims 1-11;
- ii) selectively looping back an electrical signal derived from a signal input to an optical transceiver at an optical terminal, as claimed in claims 12-17;
- iii) an optical transceiver which routes signals according to a control signal, as claimed in claims 18-20.

You will need to amend your claims, so that they relate to only one invention or inventive concept. You will also need to make consequential amendments to the description. You may wish to consider filing divisional applications. Any such applications should normally be filed no later than 3 months before the expiry of the period for putting the present application in order.

### Novelty

3. The invention as defined in claims 1, 2, 4-9, 11-18 and both claim 20s is not new because it has already been disclosed the following documents:

GB 2406988 (FINISAIR) anticipates each of the above claims;

US2002021468 (KATO) anticipates claims 12, 13, 15, 16, 18 and the second claim 20;

US 5557437 (SAKAI) anticipates claims 1, 12, 13, 18 and both claim 20s.

GB 2406988 and US2002021468 were found whilst partially updating the original ISA search. It will be necessary to carry out further searching once matters raised in this report have been addressed.

4. The most relevant parts of GB 2406988 are Figures 8-13D and line 9 of page 12 to line 4 of page 17. Fig. 12A anticipates claims 1, 2, 4, 5, 7 and 11. Fig. 12B discloses the additional features of claim 6. Fig. 12D shows the additional features of claims 12-17 and

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**[Examination Report contd.]**

Figures 13A-13C anticipates claims 8 and 9. The loopback 1 and loopback 2 signals of Figure 9 are equivalent to the control signal of claim 18.

5. Figures 2 and 3 of US2002021468 show a loopback signal 170 which is switched in or out by control signal LS.

6. The right hand column of Fig. 1 of US 5557437 represents an optical receiver, and the central column of this figure represents an optical transmitter. Loopbacks 20 and 22 are of the type required by claim 1 of the present application and loopback 24 is of the type required by claim 12 of the present application (see Fig. 1, line 51 of col. 5 to line 12 of col. 6 and claim 1). The test control signal generator 32 (see lines 44-53 of col. 6 for example) anticipates claim 18.

**Inventive step**

7. The invention as defined in claims 2 and 3 is obvious in view of what has already been disclosed in the document US 5557437 (cited above). US 5557437 teaches the principle of using various levels of loopbacks to enable a fault in a transceiver to be isolated. It is common general knowledge in the art of optical communication that optical transceivers almost invariably contain a laser driver and post amplifier, often integrated with all other electrical components on a single IC. It would be obvious to a person skilled in the art that an additional loopback level could be added above loopback 20, within the E/O and O/E converters of US 557437 to enable faults in a laser or/and post amplifier to be identified. The skilled person would thus arrive at the invention of claims 3 and 4.

**Clarity of claims**

8. The term "eye opener" which is used in claim 5, later dependent claims and claim 17, is not clear in scope. Furthermore claim 8 suggests that a buffer should be regarded as an "eye opener", as should a clock and data recovery unit, or an RT. However clearly a buffer cannot be regarded as an "eye opener" because it merely delays data, it does not on its own serve to improve the quality of a data signal.

9. There are two claim 20s.

**Novelty or Inventive step**

10. Although your invention is not set out clearly in claims 5-9 and 17, it seems that these claims might not be new or might be obvious in view of what is disclosed in the following documents:  
US2002021468



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US 5557437.

Arguably, CDR 132 and FIFO buffer 152 of US 2002021468 are each "eye openers". Similarly, in US 5557437, LOS detector 3 / transmission line alarm detector 7 and PTR processor 11 can be regarded as "eye openers".

#### Further search

11. A further search may be necessary after you have amended the specification.

#### Description

12. The statements of invention at pages 3 and 4 should be consistent with the claims as finally worded.
13. The first sentence of the final paragraph of the description and the text "and range of equivalency" in the final sentence of the description both obscure the scope of the invention and should be deleted.